REMARKS

Claims 1, 78, and 82 have been amended. Claim 84 has been canceled. Claims 1-26, 30, 44-61, 77-83, and 85-88 are now pending. Applicant notes that the amendments to claims 1, 78, and 82 do not raise new issues and should be entered in accordance with 37 C.F.R. 1.116(a) and MPEP 714.12 and 714.13. Reconsideration and allowance of all of the claims in view of the above amendments and the following remarks are respectfully requested.

The Examiner is thanked for the allowance of claims 21-26, 30, 44-61, 77, and 86-88. In addition, dependent claims 4, 5, 9-12, 14, 15, 84 and 85 have been allowed subject to being rewritten in independent form. In this regard, the independent claim 82 has been amended to include the limitation recited in claim 84. Therefore, it is respectfully submitted that amended independent claim 82 is allowable along with its dependent claims 83 and 85 are in condition for allowance.

Independent claim 1 has been amended to rephrase the limitation that the flux stabilization ring is provided "around the upper and lower pole pieces to hold the upper and lower pole pieces substantially together" as suggested by the Examiner as being distinguishable over the cited references. Note that amendment to claim 1 was not done to further limit the scope of the invention; rather the amendment was made to rephrase the limitation to clarify that the flux stabilization ring is used to hold the upper and lower pole pieces substantially together. Accordingly, claim 1 and its dependent claims 2-20 are in condition for allowance.

The Office Action rejected claims 78-81 under 35 U.S.C. 103(a) as being obvious based on Hathaway (U.S. Patent No. 4,295,011) in view of PCT/WO 99/48329. According to the Examiner, the'011 Patent discloses a flux return having an extended plate tip. In this regard, claim 78 has been amended to clarify that the top and bottom extended plate tips have "an enlarge surface" adjacent to the flux return. In contrast, the '011 Patent discloses forming chamfered surfaces 62 and 64 on the plate 16, which reduces the planner surface area 76 that is juxtaposed to the magnetic gap. Accordingly, independent claim 78 and its dependent claims 79-81 are in condition for allowance.

<u>Conclusion</u>

In view of the foregoing, it is respectfully submitted that all claims are in condition for allowance. Reexamination and reconsideration of the application, as amended, are respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call Applicants' undersigned representative at (213) 689-5176 to discuss the steps necessary for placing the application in condition for allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 07-1853. Should such additional fees be associated with an extension of time, applicants respectfully requests that this paper be considered a petition therefore.

Respectfully submitted,

Sung I. Oh, Reg. No. 45,583
Attorney for Applicants

Squire, Sanders & Dempsey, LLP
810 South Figueroa, 14th Floor
Los Angeles, CA 90017
Telephone: (213) 689-5176
Facsimile: (213) 623-4581

Amendments to the Claims:

This Listing of Claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

Please cancel claim 84 without prejudice.

Please amend claims 1, 78, and 82 as follows:

1. (currently amended) An electromagnetic drive motor, comprising:
a flux return assembly including:
an upper pole piece;
a lower pole piece;
a flux stabilization ring around the upper and lower pole pieces [and coupling] to hold the upper and lower pole pieces substantially together;
a top plate;
a bottom plate;
a magnet in between the top and bottom plates;
a top magnetic gap between the flux return assembly and the top plate; and
a bottom magnetic gap between the flux return assembly and the bottom plate.

2. (original) An electromagnetic drive motor according to claim 1, wherein the flux return assembly is within the top and bottom plates, the flux return assembly having a hole along a centerline.

3. (original) An electromagnetic drive motor according to claim 1, wherein the top and bottom plates are within the flux return assembly.

4. (original) An electromagnetic drive motor according to claim 2, wherein both the upper and lower pole pieces have an exterior side and an inner side, the inner sides of both the upper and lower pole pieces juxtaposed to each other, wherein the combined upper and lower pole

pieces assembly define an outer wall and an inner wall of the flux return assembly, wherein the flux return assembly has a smaller outer diameter along the inner side than the exterior side defining a recess about the inner side of the flux return assembly.

5. (original) An electromagnetic drive motor according to claim 4, wherein the flux stabilization ring has a smaller inner diameter than the outer diameter of the flux return assembly along the inner side, wherein the flux stabilization ring wraps around the recess of the flux return assembly.

6. (original) An electromagnetic drive motor according to claim 2, further including:

a first voice coil;

a second voice coil;

a cylinder, the first and second coils wound around the cylinder; and

wherein the cylinder is disposed in the top and bottom magnetic gaps.

7. (original) An electromagnetic drive motor according to claim 6, wherein the first voice coil is juxtaposed to the top plate and the second voice coil is juxtaposed to the bottom plate.

8. (original) An electromagnetic drive motor according to claim 6, wherein the first and second coils are coupled to each other externally from the cylinder and to a pair of terminals.

9. (original) An electromagnetic drive motor according to claim 2, wherein the top plate has a top plate tip juxtaposed to the upper pole piece facing towards the bottom plate, and the bottom plate has a bottom plate tip juxtaposed to the lower pole piece facing towards the top plate.

10. (original) An electromagnetic drive motor according to claim 2, wherein the top plate has a top plate tip juxtaposed to the upper pole piece facing away from the bottom plate, and the bottom plate has a bottom plate tip juxtaposed to the lower pole piece facing away from the top plate.

11. (original) An electromagnetic drive motor according to claim 2, wherein the top plate has a top plate tip juxtaposed to the upper pole piece that faces towards and away from the bottom plate, and the bottom plate has a bottom plate tip juxtaposed to the lower pole piece that faces towards and away from the top plate.

12. (original) An electromagnetic drive motor according to claim 9, wherein the top and bottom plates each have a cavity near the top plate tip and bottom plate tip, respectively.

13. (original) An electromagnetic drive motor according to claim 2, wherein the upper pole piece has a upper pole tip juxtaposed to the top plate, and the bottom pole piece has a lower pole tip juxtaposed to the bottom plate.

14. (original) An electromagnetic drive motor according to claim 2, wherein the upper and lower pole pieces are symmetrical.

15. (original) An electromagnetic drive motor according to claim 2, further includes an intermediate gap between the top and bottom magnetic gaps, an outer flux stabilization ring in between the magnet and the flux stabilization ring, wherein the intermediate gap is between the outer flux stabilization ring and the flux stabilization ring.

16. (previously amended) An electromagnetic drive motor according to claim 2, wherein the flux stabilization ring is made of aluminum.

17. (original) An electromagnetic drive motor according to claim 2, wherein the electromagnetic drive motor is enclosed in a housing.

18. (original) An electromagnetic drive motor according to claim 2, wherein the magnet is an assembly of three layers of magnets.

19. (previously amended) An electromagnetic drive motor according to claim 1, wherein the top plate has an increased saturation area where the cross-sectional area is smaller than the rest of

the top plate juxtaposed to the top magnetic gap, wherein the saturation area has a maximum level of magnetic field strength from about 10,000 Gauss to about 22,000 Gauss.

20. (previously amended) An electromagnetic drive motor according to claim 1, wherein the upper pole piece has an increased saturation area where the cross-sectional area is smaller than the rest of the top plate juxtaposed to the top magnetic gap, wherein the saturation area of the upper pole piece has a maximum level of magnetic field strength from about 10,000 Gauss to about 22,000 Gauss.

21. (previously amended) An electromagnetic drive motor, comprising:

a flux return;

a top plate;

a bottom plate;

a magnet in between the top and bottom plates;

a top magnetic gap between the flux return and the top plate; and

a bottom magnetic gap between the flux return and the bottom plate, wherein the flux return has an upper pole tip with an enlarged surface juxtaposed to the top magnetic gap and a lower pole tip with an enlarged surface juxtaposed to the bottom magnetic gap.

22. (original) An electromagnetic drive motor according to claim 21, wherein the flux return is within the top and bottom plates.

23. (original) An electromagnetic drive motor according to claim 21, wherein the top and bottom plates are within the flux return.

24. (original) An electromagnetic drive motor according to claim 21, wherein the top plate near the top magnetic gap is saturated to a maximum level of magnetic field strength from about 10,000 Gauss to about 22,000 Gauss.

25. (original) An electromagnetic drive motor according to claim 21, wherein the top and bottom plates near the corresponding magnetic gaps are saturated to a maximum level of magnetic field strength from about 10,000 Gauss to about 22,000 Gauss.

26. (original) An electromagnetic drive motor according to claim 21, wherein the flux return near the top and bottom magnetic gaps are saturated to a maximum level of magnetic field strength from about 10,000 Gauss to about 22,000 Gauss.

27. (cancelled).

28. (cancelled).

29. (cancelled).

30. (original) An electromagnetic drive motor according to claim 21, wherein the electromagnetic drive motor has a centerline, wherein along the centerline is a hole.

31. – 43. (cancelled).

44. (original) A method for forming an inner flux return, comprising the steps of:

providing an upper pole piece configured to be a ring, the upper pole piece having an exterior side, an inner side, an outer wall, and an inner wall, the diameter of the outer wall along the inner side being smaller than the diameter along the exterior side;

providing a lower pole piece substantially similar to the upper pole piece;

providing a flux stabilization ring between the upper and lower pole pieces, wherein the inner diameter of the flux stabilization ring is smaller than the diameter of the outer wall along the inner side of the pole pieces; and

pressing the inner side of the upper pole piece to the inner side of the lower pole piece, wherein the flux stabilization ring holds the upper and lower pole pieces substantially together.

45. (original) A method according to claim 44, further including the steps of:

laying a layer of adhesive between the inner sides of the upper and lower pole pieces.

46. (original) A method according to claim 44, further including the steps of:

saturating the upper and lower pole pieces near the exterior sides and the outer walls of the upper and lower pole pieces.

47. (original) A method according to claim 44, further including the steps of:

laying a layer of adhesive between the inner side of the flux stabilization ring and outer diameter along the inner sides of the upper and lower pole pieces.

48. (original) A method according to claim 46, wherein the saturation of the magnetic field strength is from about 10,000 Gauss to about 22,000 Gauss.

49. (previously amended) A method for minimizing the modulation in the magnetic gap of an electromagnetic drive motor, comprising the steps of:

saturating a top plate near a top magnetic gap;

saturating a bottom plate near a bottom magnetic gap;

providing a flux return, wherein the top and bottom magnetic gaps are between the flux return and the top and bottom plates; and

enlarging the surface area in the top and bottom plates juxtaposed to the top and bottom magnetic gaps, respectively.

50. (original) A method according to claim 49, further including the steps of:

saturating the flux return near the top and bottom magnetic gaps.

51. (original) A method according to claim 50, wherein the flux return is within the top and bottom plates.

52. (original) A method according to claim 49, further including the steps of:

using finite element analysis to design the top and bottom plates to operate below the saturation point based on a predetermined flux lines running through the top and bottom plates.

53. (original) A method according to claim 49, further including the steps of:

saturating the top and bottom plates to a maximum level of magnetic field strength from about 10,000 Gauss to about 22,000 Gauss.

54. (original) A method according to claim 53, wherein the maximum level of magnetic field strength is from about 17,000 Gauss to about 20,000 Gauss.

55. (original) A method according to claim 49, further including the steps of:

saturating the flux return near the top and bottom magnetic gaps to a maximum level of magnetic field strength from about 10,000 Gauss to about 22,000 Gauss.

56. (original) A method according to claim 49, wherein the saturation of the top plate is done by providing a smaller cross-sectional area to squeeze the magnetic field in the smaller cross-sectional area in the top plate adjacent to the top magnetic gap; and

saturation of the bottom plates is done by providing a smaller cross-sectional area to squeeze the magnetic field in the smaller cross-sectional area in the bottom plate adjacent to the bottom magnetic gap.

57. (original) A method according to claim 54, wherein the saturation of the flux return near the top and bottom magnetic gaps are done by providing smaller cross-sectional areas near the top and bottom magnetic gaps respectively to squeeze the magnetic field through the smaller cross-sectional areas near the top and bottom magnetic gaps.

58. (previously amended) A method for increasing the magnetic flux lines running through a magnetic gap of an electromagnetic drive motor, comprising the steps of:

providing a top and bottom plates juxtaposed to respective top and bottom magnetic gaps within an electromagnetic drive motor;

providing more surface area in the top plate juxtaposed to the top magnetic gap; and

providing more surface area in the bottom plate juxtaposed to the bottom magnetic gap.

59. (previously amended) A method according to claim 58, further comprising the steps of:

providing a flux return, wherein the top and bottom magnetic gaps are between the flux return and the top and bottom plates.

providing more surface area in the flux return juxtaposed to the top and bottom magnetic gaps.

60. (previously amended) A method according to claim 58, wherein more surface area is provided in the top plate by a top plate tip and more surface area is provided in the bottom plate by a bottom plate tip, wherein the top and bottom plate tips face towards each other.

61. (original) A method according to claim 60, wherein between the top and bottom magnetic gap is an intermediate gap, wherein the top and bottom plate tip substantially extends across the intermediate area but not so much that a magnetic short circuit is created between the top and bottom plate tips.

62.-76. (cancelled).

77. (previously added) An electromagnetic drive motor, comprising:

a flux return;

a top plate;

a bottom plate;

a magnet in between the top and bottom plates;

a top magnetic gap between the flux return and the top plate; and

a bottom magnetic gap between the flux return assembly and the bottom plate, wherein the top plate has a top plate tip juxtaposed to the top magnetic gap facing away from the bottom plate, and the bottom plate has a bottom plate tip juxtaposed to the bottom magnetic gap facing away from the top plate.

78. (currently amended) An electromagnetic drive motor, comprising:

a flux return;

a top plate having a top extended plate tip <u>with an enlarged surface</u> adjacent to the flux return, where between the top extended plate tip and the flux return is a top magnetic gap; and

a bottom plate having a bottom extended plate tip <u>with an enlarged surface</u> adjacent to the flux return, where between the bottom extended plate tip and the flux return is a bottom magnetic gap.

79. (previously added) The electromagnetic drive motor of claim 78, further including a magnet in between the top and bottom plates.

80. (previously added) The electromagnetic drive motor of claim 78, where the flux return has an upper pole tip juxtaposed to the top extended plate tip and a lower pole tip juxtaposed to the bottom extended plate tip.

81. (previously added) The electromagnetic drive motor of claim 80, where the flux return has saturation regions adjacent to the upper and lower pole tips.

82. (currently amended) A method for coupling an upper pole piece and a lower pole piece <u>each having a recess wall</u> to form a flux return assembly, the method comprising:

fitting the upper and lower pole pieces into a ring to hold the upper and lower pole pieces substantially together <u>by press fitting the recess outer wall for each of the upper and lower pole pieces into the ring</u>.

83. (previously added) The method according to claim 82, where the step of fitting is done by press fitting the upper and lower pole pieces into the ring.

84. (currently cancelled).

85. (previously added) The method according to claim 84, where the ring is flush within the recess outer walls of the upper and lower pole pieces.

86. (previously added) The electromagnetic drive motor according to claim 21, where the enlarged surface in the upper and lower pole tips are substantially parallel to the longitudinal axis of the magnetic gap.

87. (previously added) The method according to claim 49, where the surface area in the top and bottom plates are substantially parallel to the longitudinal axis of the magnetic gap.

88. (previously added) The method according to claim 58, where the surface area in the top and bottom plates are substantially parallel to the longitudinal axis of the magnetic gap.